METHOD FOR ISOTOPE SEPARATION OF THALLIUM

Abstract of the Disclosure

A method for isotope separation of thallium using a laser beam is disclosed. The method comprises the steps of: (a) producing photons of a first frequency by a laser system, wherein said first frequency is about 378 nm; (b) producing photons of a second frequency by said laser systems, wherein said second frequency is about 292 nm; (c) producing photons of a third frequency by said laser system, wherein said third frequency is in the range of 700 nm to 1400 nm; (d) applying said photons of said first, second and third frequencies to said vapor of said thallium, wherein said photons of said first frequency pump isotope-selectively a plurality of ground state thallium atoms through an excited state into a metastable state, and wherein said photons of said second frequency excite a plurality of metastable state thallium atoms to an intermediate, resonant state, and wherein said photons of said third frequency ionize a plurality of atoms in said intermediate, resonant state through continuum states; and (e) collecting said isotope ions. Thallium isotope can efficiently be separated with small scale facilities.